Lake Tempe are also considerable sheets of water. Their great depth is notable; Lake Posso is 160 fathoms deep, Lake Motana 260 fathoms. The authors believe that they are of tectonic origin and are due to depression in the synclines between the mountain uplifts. They may be flanked by lines of fault, and the very steep slopes of their shores, as shown by the soundings, is easily explained on this hypothesis. Their resemblance to the Central African lakes is close and is heightened by the presence in them of a molluscan fauna the affinities of which are said to be Miocene. Their great depth would appear to be against their Miocene origin, but as the areas that drain into them are small, it may well be that the deposition of sediment is too slow to have produced any very great effects. It is suggested that depression has also taken place and has counterbalanced the accumulation of alluvial material brought down by the streams.

In conclusion, it may be noted that the work contains a full bibliography of the geology and geography of Celebes, and the description of each district is accompanied by a synopsis of the observations of previous travellers.

OUR BOOK SHELF.

More Tales of the Birds. By W. W. Fowler. Pp. 232; illustrated. (London: Macmillan and Co., Ltd.) Price 3*s.* 6*d.*

THIS is a delightful little book of stories, admirably written and beautifully illustrated, in which birds play a more or less important part. It is in no way one of the numerous works on the popular natural history of birds with which the market is nowadays flooded, but strikes a line peculiarly its own. In the first chapter we have a pathetic story of a young soldier whose thoughts were turned to home and its associations during the Waterloo campaign by a lark's nest which escaped destruction although situated in the midst of the great battle-field. The second deals with the toils and troubles of a house-martin, as supposed to be narrated by the bird itself. In regard to the reason for the annual migration, the bird is made to say: "We always do come here, and our ancestors always came, so I suppose we shall go on doing it. Besides, this is really our home. We were born here, you see; and when the heat begins in South Africa there comes a terrible feeling in our hearts, a terrible home-sickness, and we *must* go." Evidently, so far as birds are concerned, the author does not believe in the theory that Africa was a great centre of animal evolution.

Jackdaws, magpies and starlings severally form the texts for other chapters. To ornithologists, perhaps, the interest of the book will centre on the exquisite illustrations, by the accomplished pencil of Miss F. L. Fuller, which are alone worth the price charged. Although there are some to whom this class of writing does not appeal, many readers of all ages and both sexes will doubtless find pleasant occupation for a spare hour or two in this bright and entertaining little volume. R. L.

College Algebra. By L. E. Dickson, Ph.D. Pp. viii + 214. (New York: Wiley and Sons. London: Chapman and Hall, Ltd., 1902.)

THE usual profession of "rigour" is followed here by the usual inaccuracies. On page vii. we are told that = means "equal"; on p. 69 it is stated without proof that if r is a proper fraction the limit of r^n is zero when n increases indefinitely; the discussion of the exponential theorem in art. 129 is thoroughly unsound, and the proof that every equation has a root (pp. 211–12) is marred by serious defects. On the other hand, the chapters on logarithms, mathematical induction and theory of equations are good. Probably this book has been written rather hastily; otherwise it is difficult to understand how such a competent mathematician as the author is known to be should have overlooked so many deficiencies. Even in the chapter on the binomial theorem for any index, he calmly applies the rule for multiplying two power-series without discussing its validity either there or in any other passage of the book! Finally, Mr. Charles Smith is made responsible for the assertion that the binomial expansion of $(1+x)^n$ converges for $x = 1$ if $n < -1$. Very likely this is an uncorrected misprint for $n > -1$; but why refer to Mr. Smith instead of to Abel's classical memoir? M.

A Laboratory Manual of Physics. By H. Crew, Ph.D. and R. R. Tatnall, Ph.D. Pp. xii + 230. (New York: The Macmillan Company; London: Macmillan and Co., Ltd., 1902.) Price 5*s.*

EACH exercise commences with references to certain school text-books, but, unfortunately for the British reader, these are all American works, and, so far as the reviewer knows, they are not used in any schools here. We are amused to find that metre scales are called metre "sticks" in the States. There is a good simple chapter on inertia, and a form of inertia balance is described. It seems to us a mistake to omit all experiments on velocity and acceleration because of their difficulty. Friction occurs in all real machines, and it ought to be studied in elementary works. The apparatus is generally of quite a simple character and very suitable for school use. Appendix A contains an extract from one of Boyle's papers in which he describes an instrument virtually the same as Nicholson's hydrometer, and the authors call attention to this in their description of that instrument. The book will prove very useful in conjunction with the text-books to which references are made. S. S.

Photographic Apparatus. Making and Repairing. By F. W. Cooper, D. W. Gawn and others. Edited by E. Brown. Pp. xvi + 128. (London: Dawbarn and Ward, Ltd., 1902.) Price 1*s.*

IT is not every photographer who wishes to make or repair his own apparatus, but those who are acquainted with the use of tools will find this small book a useful help if they require it in aiding them to fit up all kinds of convenient accessories to the photographic camera and dark room. The information given is concise and the instructions are clear; and numerous illustrations, 180 in number, are included which materially aid the text from a beginner's point of view. The ground covered is by no means meagre, for the worker is made acquainted with such subjects as the studio and studio fitments, the dark room and its fixtures, cameras and accessories, printing and enlarging apparatus, concluding with numerous and useful miscellaneous attachments. That the instructions are the result of practice is shown by the numerous writers on the varied subjects, most of the information being reprinted with additions from articles in *The Photogram.*

Monographie der Gattung Alectorolophus. Von Dr. Jakob von Sterneck (Trautenau). (*Abhandlungen* der k.k. zool.-botan. Gesellschaft in Wien, Band i., Heft 2, October 31, 1901.) Pp. 150. (Wien: Holder.)

AN exhaustive monograph of a genus of plants, variously known under the names of Fistularia, L., Rhinanthus, L., Alectorolophus (Haller), Allioni, and Mimulus, Scopoli. Fifty-one species and two hybrids are described by the author. The genus is most numerous in Europe (a familiar British representative being a common meadow-plant, known as the Yellow Rattle); but it also extends throughout a considerable portion of temperate Asia and North

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America. The species are divided into six sections, and the synonymy, variation, distribution, &c., of each species are given in great detail, at least in the case of well-known species. The probable evolution and phylogeny of the genus are also discussed, and to the latter subject the elaborate "Stammbaum" is devoted. The three maps show the distribution of various species of the genus. Scientific botanists should find much to interest them in Dr. Sterneck's work.

A Text-book of Insanity. By Charles Mercier. Pp. xiv + 222. (London: Swan Sonnenschein and Co., Ltd., 1902.) Price 6*s*. net.

MR. MERCIER addresses his little work directly to the ordinary medical student, for whom, it appears from the preface, there has hitherto been no text-book of insanity of moderate compass. For the practical student so clear and brief a description of the leading types of mental disorder from the pen of a recognised authority will be of high value. The work has also its merits from the standpoint of the theoretical psychologist, though he will probably prefer to study the author's views in his larger work, "Psychology Normal and Morbid." The account of normal mental activities by which the description of insane deviations from the normal is preceded is eminently clear and judicious. The psychologist should also be thankful to the author for discarding the bewildering nomenclature of *manias* and *phobias*, and offering a simple and intelligible classification of mental diseases, based on the distinction between forms of insanity (*i.e.* the aggregate symptoms presented simultaneously at any stage by a patient) and varieties of insanity (*i.e.* specific types of the course run by a case from first to last). Besides purely medical and psychological information, the book contains some useful remarks on the legal responsibilities of the practitioner in connection with insane patients. A. E. T.

Leçons sur les Séries à termes positifs. Par Émile Borel. Recueillies et rédigées par Robert d'Adhémar. Pp. viii + 94. (Paris: Gauthier-Villars, 1902.) Price fr. 3·50.

THIS appears as the third instalment of Prof. Borel's lectures on the theory of functions. It is somewhat more fragmentary than its predecessors, and has, in fact, the typical qualities and defects of a set of lecture-notes. As an introduction to the memoirs of Hadamard, Mittag-Leffler and Poincaré, as well as to those of Prof. Borel himself, these chapters will be very serviceable. Perhaps the most noteworthy articles are those which deal with the theory of increment (*croissance*); it is there shown that there is no natural scale of orders of magnitude. In fact, an aggregate of orders of increasing functions can be constructed which is not numerable. Moreover, functions have been invented which have no regular order of increase; thus an example is given of a function which is comparable with $\exp x$ for an infinite number of values of the variable, and with $\exp(\exp x)$ for another infinite number of values. This will cause searchings of heart in certain quarters, no doubt; even Prof. Borel remarks that "fort heureusement, les fonctions qui se présentent *naturellement* aux géomètres sont, en général, de nature plus simple."

Practical Exercises in Magnetism and Electricity. By H. E. Hadley, B.Sc. Pp. xii + 232. (London: Macmillan and Co., Ltd., 1901.) Price 2*s*. 6*d*.

THIS is an excellent collection of laboratory experiments, suitable for the higher classes in secondary and public schools. Magnetism is taken first, then electrostatics and current electricity. An appendix gives some instruction for making the necessary apparatus. The author wisely confines the experiments to those which can be performed with quite simple apparatus.

LETTERS TO THE EDITOR.

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A Remarkable Lunar Halo.

ON the night of January 19 of this year a singular lunar phenomenon was visible here. The sky had clouded over and was covered with a nearly uniform whitish sheeting of cloud, through which the brighter stars could be seen. There was no wind. The barometer stood at 29·20 inches and the temperature was 28° F. The moon, which was near the meridian, was ten and a quarter days old and had a north declination of 19°.

Surrounding the moon was the ordinary lunar halo of 45° or 50° in diameter, which is so often seen at the approach of bad weather. This ring was clearly defined on its inner edge, which was of a reddish or brownish colour; it rapidly diffused on its outer edge and was perhaps a couple of degrees in thickness. The whole interior of the ring was darker than the sky outside of it anywhere, which is its customary appearance.

Cutting exactly through the moon, with its centre near the zenith—in the region of Capella—was another ring of apparently the same dimension and brightness, and similar to the other in every respect. It too was sharply defined on its inner edge, where it was fringed with a reddish or brownish colour. The general colour of the two rings was whitish, with a suggestion of yellow. The interior of this ring was also darker than the sky outside. There was no noticeable increase of light where the two rings intersected. They seemed to merge into one another without any evidence of the crossing.

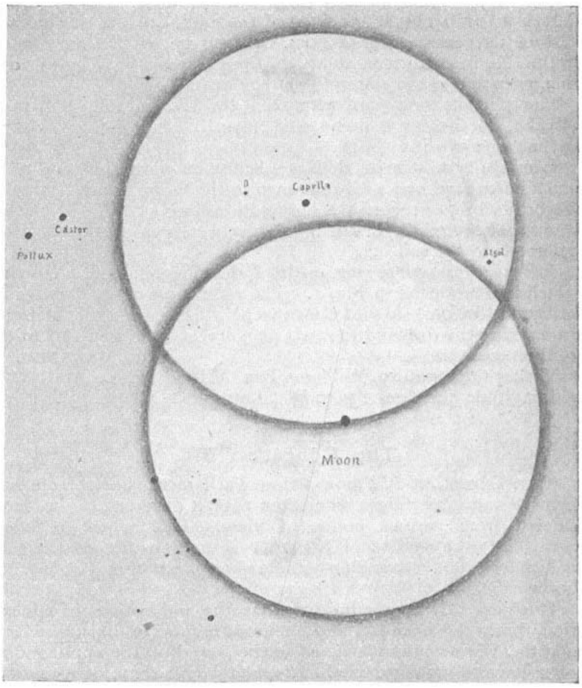

FIG. 1.—Lunar Phenomenon 1902, January 19, 9 p.m.

This phenomenon was first seen at 8h. 50m. (6h. 0m. slow of Greenwich Mean Time). It was perhaps visible for some time before this. I had been observing with the large telescope when the increasing cloudiness had stopped work. It was noticed (a few minutes before seeing the phenomenon) that the seeing had suddenly got excessively bad.

The extra ring remained visible until 9h. 20m., at which time it disappeared—not all at once, but gradually and unequally.

During the time it was under observation, from 8h. 50m. to 9h. 20m., this ring revolved eastward in position angle, about

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